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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,971	11/16/2001	Mitsuhiro Nishida	K-2020	7874

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EXAMINER
PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
1775	8

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/987,971	Applicant(s) NISHIDA ET AL.	
	Examiner Andrew T Piziali	Art Unit 1775	

-- Th MAILING DATE of this communication appears on th cover she t with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 7-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 7-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities: Claim 13 states that the "low refractive index layer further includes..." but parent claim 1 fails to initially specify something that is to be included in the low refractive index layer. Deletion of the word "further" would remove this objection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 claims the "low refractive index layer further includes...to improve reduction of refractive index of the antireflection film, resistance to scuffing and slipperiness of the antireflection film." It is not clear what is initially included in the low refractive index layer.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 7-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,925,438 to Ota et al (hereinafter referred to as Ota) in view of USPN 5,665,422 to Endo et al. (hereinafter referred to as Endo).

Regarding claims 1, 7-11 and 13-15, Ota discloses an antireflection film, suitable for use in a liquid crystal display or a window glass for automobiles (column 1, lines 4-12), comprising an organic film, a hard-coating layer, a high refractive index layer, and a low refractive index layer (paragraph bridging columns 2 and 3, Figure 3). Ota discloses that the high refractive index layer may comprise a resin with fine particles dispersed therein (column 8, lines 16-22). Ota discloses that the particles that may be dispersed in the resin include TiO_2, SnO_2, and ITO (column 8, lines 36-46).

Ota fails to specifically mention the use of two different particles dispersed in the resin, but Endo discloses an antireflection film, suitable for use in a liquid crystal display or in a window glass for automobiles (column 3, lines 61-67), comprising an organic film (column 9, lines 23-35), a high refractive index layer including one or more types of metal oxide particles, and a low refractive index layer (paragraph bridging columns 8 and 9, and column 14, lines 43-60). Endo discloses that "As the ultrafine particles having a high refractive index and a light-transmitting and electrically conductive function...there can be exemplified metal oxides such as SnO_2, In_2O_3, TiO_2 and ZrO_2 and mixtures thereof" (paragraph bridging columns 8 and 9). Endo discloses that by producing a high refractive index layer with two different metal oxides the high refractive index layer can be formed with excellent light-transmitting properties as well as high electrical conductivity (paragraph bridging column 8 and 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include both TiO_2 particles and ITO particles in the high refractive index layer of Ota, as disclosed by Endo, because in combination the two particles provide the layer with excellent light-transmitting properties and high electrical conductivity, properties desired in some antireflection film applications.

Endo does not mention the specific volume percentage of the particles of TiO_2 to the total volume of the particles of TiO_2 and the particles of ITO, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of TiO_2 and ITO particles to acquire a high refractive index layer with the desired light transmitting and electrical conductivity properties for the intended application. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Ota discloses that the type and amount of particles and resin may be changed so that the refractive index is in the range of 1.50 to 2.30 (column 8, lines 47-54). Ota does not mention specific volume percentages of metal oxide particles to the total volume of metal oxide particles and resin, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages, to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 7, Ota does not mention the surface resistance of the antireflection film, but considering the substantially identical antireflection film of Ota in view of Endo, compared to the applicants' antireflection film, it appears that the antireflection film of Ota in view of Endo would possess a surface resistance of $5x10^{12}$ $\Omega/\square$, as claimed by the applicants.

Regarding claims 8-10, Ota discloses that it is preferable that the high refractive index layer be formed with a refractive index in the range of 1.50 to 2.30 (column 8, lines 47-65) and that the low refractive index layer be formed with a refractive index in the range of 1.38 to 1.46 (column 5, lines 10-15).

Regarding claim 11, Ota discloses that the resin in the high refractive index layer may be polystyrene (column 8, lines 23-35).

Regarding claims 13-14, Endo discloses that the low refractive index layer may comprise a binder with particles of silica (column 6, lines 6-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layer of Ota from any suitable low refractive index material, such as a binder containing silica particles, as disclosed by the Endo, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. Endo does not specifically mention the weight percent of particles in the low refractive index layer but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the weight percentage to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 14-15, Ota discloses that the hard coating layer may include ITO particles (column 4, lines 27-41).

Regarding claim 15, Ota does not specifically mention the volume percent of metal oxide particles to the total volume of the metal oxide particles and the resin in the hard coating layer, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Endo as applied to claims 1, 7-11 and 13-15 above, and further in view of Applicant's Disclosure.

Ota discloses that the low refractive index layer may be a SiO_2 gel film (column 5, lines 10-16), specifically, it may be a fluorine organosilicon compound (column 6, lines 14-42). Ota fails to specifically mention forming the low refractive index layer of acrylic resin containing fluorine or silicon resin, but the applicant discloses that fluorine-based acrylic resin and silicon resin are conventionally used as a material for the low refractive index layer of an antireflection film (see paragraph 0006). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layer of Ota from any suitable low refractive index material, such as acrylic resin containing fluorine or silicon resin, as disclosed by the current applicant, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice.

7. Claims 1, 7-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,665,422 to Endo in view of USPN 5,925,438 to Ota.

Regarding claims 1, 7-11 and 13-15, Endo discloses an antireflection film, suitable for use in a liquid crystal display or in a window glass for automobiles (column 3, lines 61-67), comprising an organic film (column 9, lines 23-35), a high refractive index layer including at least two kinds of metal oxide particles, and a low refractive index layer (paragraph bridging columns 8 and 9 and column 14, lines 43-60). Endo discloses that "As the ultrafine particles having a high refractive index and a light-transmitting and electrically conductive

function...there can be exemplified metal oxides such as SnO_2, In_2O_3, TiO_2 and ZrO_2 and mixtures thereof' (paragraph bridging columns 8 and 9).

Endo fails to mention the use of a hard-coating layer, but Ota discloses an antireflection film, suitable for use in a liquid crystal display or a window glass for automobiles (column 1, lines 4-12), comprising an organic film, a hard-coating layer to provide abrasion resistance, a high refractive index layer, and a low refractive index layer (paragraph bridging columns 2 and 3, Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a hard-coating layer, as disclosed by Ota, in the antireflection film of Endo, because the hard-coating layer provides abrasion resistance for the substrate.

Endo does not mention the specific volume percentage of the particles of TiO_2 to the total volume of the particles of TiO_2 and the particles of ITO, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of TiO_2 and ITO particles to acquire a high refractive index layer with the desired light transmitting and electrical conductivity properties for the intended application.

Endo discloses that the high refractive index layer comprises synthetic resin as a result of the synthetic resin of the low refractive index layer flowing down into the high refractive index layer (paragraph bridging column 7 and 8 and Figure 7). Endo does not mention specific volume percentages of metal oxide particles to the total volume of metal oxide particles and resin, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages, to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 7, Endo does not mention the surface resistance of the antireflection film, but considering the substantially identical antireflection film of Endo in view of Ota, compared to the applicants' antireflection film, it appears that the antireflection film of Endo in view of Ota would possess a surface resistance of $5x10^{12}$ Ω/□, as claimed by the applicants.

Regarding claims 8-10, Endo discloses that the high refractive index layer may comprise TiO_2 particles in an admixture with ITO particles (paragraph bridging column 8 and 9). Endo also discloses that the low refractive index layer may comprise SiO_2 (column 8, lines 30-39). Endo does not mention the specific refractive indices of the high and low refractive index layers, but considering the substantially identical compositions of the layers, compared to the high and low refractive layer disclosed by the applicants, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of resin, TiO_2 particles, and ITO particles to acquire a high refractive index layer with the desired refractive index for the intended application.

Regarding claim 11, Endo discloses that the resin in the high refractive index layer may be an acrylic resin (column 6, lines 17-23).

Regarding claims 13-14, Endo discloses that the low refractive index layer may comprise a binder with particles of silica (column 6, lines 6-16). Endo does not specifically mention the weight percent of particles in the low refractive index layer but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the weight percentage to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 14-15, Ota discloses that the hard coating layer may include ITO particles (column 4, lines 27-41).

Regarding claim 15, Ota does not specifically mention the volume percent of metal oxide particles to the total volume of the metal oxide particles and the resin in the hard coating layer, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo in view of Ota as applied to claims 1, 7-11 and 13-15 above, and further in view of Applicant's Disclosure.

Endo discloses that the low refractive index layer may be a binder with silica particles (column 6, lines 6-16), but Endo fails to specifically mention forming the low refractive index layer of acrylic resin containing fluorine or silicon resin. The applicant discloses that fluorine-based acrylic resin and silicon resin are conventionally used as a material for the low refractive index layer of an antireflection film (see paragraph 0006). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layer of Endo from any suitable low refractive index material, such as acrylic resin containing fluorine or silicon resin, as disclosed by the current applicant, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Response to Arguments

9. Applicant's arguments filed 2/19/2003 have been fully considered but they are not persuasive.

The applicant asserts that the combination of ITO and TiO_2 particles with the specific ratio is very important in the invention. The applicant also asserts that the volume percentage of the metal oxide particles to the synthetic resin is important, however, absent a showing of unexpected results or a showing of criticality for the claimed specific volume percentage of the TiO_2 particles to the total volume of TiO_2 particles and ITO particles, or for the claimed specific volume percentage of metal oxide particles to the total volume of the metal oxide particles and resin, no patentable distinction is seen between the film of the combined references and that of the instant claims.

The applicant asserts that Endo does not disclose the combination of ITO (In_2O_3+SnO_2) and TiO_2 particles. The examiner respectfully disagrees. Endo discloses that "As the ultrafine particles having a high refractive index and a light-transmitting and electrically conductive function...there can be exemplified metal oxides such as SnO_2, In_2O_3, TiO_2 and ZrO_2 and mixtures thereof' (paragraph bridging columns 8 and 9).

The applicant asserts that Endo fails to disclose or suggest that the volume percentage of TiO_2 particles to the total volume of TiO_2 and ITO particles in the high refractive index layer is 1 to 60%. The examiner respectfully disagrees. Although Endo does not specifically mention the specific volume percentage of TiO_2 particles to the total volume of TiO_2 particles and ITO particles, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of TiO_2 and ITO particles to acquire a high

refractive index layer with the desired light transmitting and electrical conductivity properties for the intended application.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (703) 306-0145. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5665.

atp
March 19, 2003

Andrew T Piziali
Examiner
Art Unit 1775

DEBORAH JONES
SUPERVISORY PATENT EXAMINER